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7 Attorneys for Plaintiff

8 IN THE UNITED STATES DISTRICT COURT  
9 FOR THE DISTRICT OF ARIZONA

10 United States of America,  
11 Plaintiff,

12 vs.

13 Lonnie Ray Swartz,  
14 Defendant.  
15  
16

CR 15-01723-TUC-RCC (DTF)

GOVERNMENT'S *AMENDED*  
RESPONSE TO DEFENDANT'S MOTION  
FOR DAUBERT HEARING REGARDING  
VIDEO EVIDENCE  
(DOC. 94)

17 The United States of America, by and through its undersigned attorneys, files this  
18 Amended Response to defendant's Motion Under Daubert and FRE 403 and FRE 702 to  
19 Determine Admissibility of Video Evidence (Doc. 94).

20 *Amendments:* The government has eliminated references to filing a motion to pre-  
21 admit trial evidence, and makes its changes to the initial response between page 5, line 10,  
22 through the end of this pleading.

23 A. Facts and Background

24 The defendant is charged with the second degree murder of J.A.E.R. It is the  
25 position of the government that on October 10, 2012, the defendant, a United States Border  
26 Patrol (USBP) Agent, murdered J.A.E.R. by shooting him, while the defendant stood  
27 within the Roosevelt Reservation at the International Boundary fence between the United  
28

1 States and Mexico. The area where the shooting occurred is monitored by two USBP  
2 cameras, identified as Camera 24 and Camera 27.

3 The government expects that the evidence will show that on October 11, 2012, the  
4 morning after the shooting, a USBP Field Technology Officer (FTO) received a request to  
5 pull the camera footage for Cameras 24 and Camera 27, starting on October 10, 2012, at  
6 2315 hours, through the next morning at 0015. At that time, the USBP was using two  
7 Digital Video Recording (DVR) systems, each with 16 inputs, to store the data from the  
8 numerous USBP cameras in use in the field. The camera data was saved for 90 days on  
9 the DVRs, and then written over with new data as the 90-days expired. On October 11,  
10 2012, the TFO proceeded to the DVR housing the data for Cameras 24 and 27, and using  
11 an attached keyboard selected the date and a time range that began fifteen minutes prior to,  
12 and ended 15 minutes after the range requested. The TFO then inserted a CD in the CD  
13 writer (tray). The TFO then burned the data from the DVR to the CD, and marked the front  
14 of the CD with a date and time range. The TFO is expected to testify that there is no  
15 function on the DVR writer that would permit him to “compress” or otherwise alter the  
16 size of the video data he copied from the DVR hard drive to the CD. Furthermore, the  
17 data was copied to the disk in an .exe format which is a proprietary program developed by  
18 the maker of the DVR, that does not allow the end-user to edit or otherwise alter the .exe  
19 file.

20 The CD containing the original copy of the video was turned over to the FBI and  
21 placed in evidence. The FBI ultimately turned that evidence over to DHS-OIG, who is  
22 holding the original disk in evidence. Both the government and defense experts have been  
23 given copies of the data on the original CD and have been offered the opportunity to  
24 examine the original disk.

25 The DVRs that recorded the video in question were ultimately surplus by the  
26 USBP when the USBP obtained new cameras. When DHS-OIG and U.S. Attorney’s  
27 Office requested to preserve the DVRs on September 22, 2015, it was learned that they had  
28 been disposed of by UNICOR on or about September 18, 2017. However, the TFO is

1 expected to testify that the DVRs in question were installed at the USBP using the factory  
2 settings, and that the USBP does not tinker with the settings to compress video to save  
3 space. Rather, before purchasing a DVR, the USBP determines their space requirements  
4 by calculating the number of inputs to the DVR, the 30-frame-rate-per-second minimum  
5 rate requirement for video, and the 90-day preservation requirement. They then obtain a  
6 DVR that can accommodate those needs, along with the necessary terabytes of disk space  
7 to hold the data. That was done when the DVRs in question were ordered and installed.  
8 Furthermore, when video data is copied from the DVR to a CD, the TFO only has one  
9 option – burn a complete copy of the data in the requested date/time range from the DVR  
10 to the CD. The DVR gives the user no options to “downgrade” or “compress” the files.

11 It is the government’s position that examination of the DVRs would not have  
12 produced a different result than could be obtained from examining the .exe files preserved  
13 by the TFO on October 11, 2012. Furthermore, the government will be able to establish a  
14 chain of custody for the video files, and as such any objection by the defense goes to  
15 weight, not admissibility, of the video evidence. At trial it is expected that several of the  
16 government’s witnesses will be able to identify themselves and the defendant in the video  
17 recordings, thus independently authenticating them. Finally, the videotapes are relevant  
18 because they depict the actual shooting, the events leading up to the shooting and the  
19 handling of the evidence and crime scene on the Mexican side of the border after the  
20 shooting. Regarding expert James Tavernetti, the government expects at a hearing to  
21 demonstrate both the reliability of his opinions and the relevance of those opinions to the  
22 case at hand.

23 B. Legal Arguments

24 1. Admissibility of the Video Files

25 The defendant objects to admissibility of the video files collected into evidence by  
26 the government the morning after the shooting, arguing that they are unreliable. (Doc. 94,  
27 pp. 1-2.) Defendant contends that the video files are based on a “flawed copy of the original  
28 video,” because they are “highly compressed copies of the two videos in this case instead

1 of [ ] the originally recorded videos from the Digital Video Recording System (DVR) that  
2 recorded them.” (Doc. 94, p. 3.)

3 The government expects to be able to show that the video files in evidence are of  
4 the same quality as the original video that was stored on the DVR for 90 days after the  
5 shooting. However, even if the government were unable to establish that fact to the Court’s  
6 satisfaction, and the Court were to find it is possible that the videos in evidence were in  
7 some way “compressed” from that which was previously stored on the DVDs, the quality  
8 of the videos goes to the weight, not the admissibility of the evidence. “The district court  
9 does not abuse its discretion when it admits evidence that meets the minimum requirements  
10 for authentication under the Federal Rules of Evidence and allows the defense to argue that  
11 the jury should give the evidence minimal weight.” *United States v. Ortiz*, 776 F.3d 1042,  
12 1045 (9<sup>th</sup> Cir. 2015). Here, the government can establish a chain of custody for the video  
13 files in evidence, and witnesses on the scene can independently identify themselves and  
14 the defendant in the videos and establish that the events depicted in the video took place  
15 during the events alleged in this case. Accordingly, the defendant’s motion to suppress the  
16 video files should be denied.

17 2. Daubert Challenge to Expert James Tavernetti

18 Apart from the original video files themselves, the defendant challenges the  
19 admissibility of the testimony and 3D animations prepared by the government’s forensic  
20 video expert, James Tavernetti. The defendant does not challenge Mr. Tavernetti’s  
21 qualifications or the computer technology he used to render his video products. Rather,  
22 defense argues that his renderings are not based on “sufficient facts or data” (presumably  
23 because of the aforementioned complaint about the video quality) and that Mr. Tavernetti’s  
24 “principles and methods” are unreliable. (Doc. 94, pp. 8-9.) The defense does not elaborate  
25 on specifically which principles and methods Mr. Tavernetti used that are unreliable.

26 Federal Rule of Evidence 702 allows expert testimony that will assist a trier of fact  
27 in understanding the evidence or in determining a fact in issue, so long as “(1) the testimony  
28 is based upon sufficient facts or data, (2) the testimony is the product of reliable principles

1 and methods, and (3) the witness has applied the principles and methods reliably to the  
 2 facts of the case.” Fed.R.Evid. 702. It is the trial court's responsibility to ensure “that an  
 3 expert's testimony both rests on a reliable foundation and is relevant to the task at hand.”  
 4 *Daubert v. Merrell Dow Pharm., Inc.*, 509 U.S. 579, 597 (1993). In making this  
 5 determination, the court must make “a preliminary assessment of whether the reasoning or  
 6 methodology underlying the testimony is scientifically valid and ... whether that reasoning  
 7 or methodology properly can be applied to the facts in issue.” *Id.* at 592-93. In other words,  
 8 the trial court must find that the evidence is reliable, and that it will help the trier of fact  
 9 understand a fact in issue. *Id.* at 592. “The inquiry is a flexible one, and its focus must be  
 10 solely on principles and methodology, not on the conclusions that they generate.” *Id.* at  
 11 580.

12 The government expects to show at the *Daubert* hearing that Mr. Tavernetti  
 13 created exhibits using methods and computer programs that are widely accepted and used  
 14 in his field. Mr. Tavernetti based his work on more than just the videos discussed in the  
 15 defendant’s motion. He used three-dimensional modeling of the entire crime scene that  
 16 was collected using a 3D laser scanner, measurements of where the evidence was located,  
 17 photographs of the crime scene on both sides of the international border, measurements  
 18 from the autopsy report, autopsy photographs, a personal crime scene visit, mathematical  
 19 calculations, the defendant’s and victim’s anatomical features, known dimensions of  
 20 vehicles on the scene, follow up measurements, and consultation with the government’s  
 21 forensic pathologist. In many instances, Mr. Tavernetti is able to validate his findings and  
 22 renderings through independent pieces of evidence that both led him to the same result.

23 The exhibits fall roughly into the following categories:

- 24 1. Side-by-side video. There are two original, time-stamped videos that  
 25 recorded the scene – an east view and a west view. When the movements in  
 26 the videos are matched it is apparent there is a four-second discrepancy in  
 27 the time stamps. In Mr. Tavernetti’s opinion, this is not unusual. Mr.  
 28 Tavernetti used widely accepted techniques to locate the same movements in  
 each video and match them up, so that the two videos are synchronized, and  
 the viewer can stop and start both videos at the same time to view the contents  
 from the two different angles. [Full\_SidebySide\_360x240.mp4]

1           2.       The 3D Laser Scan. A series of exhibits are based on Michael Haag's  
2       3D laser scan of the Mexican and United States crime scenes. Mr. Tavernetti  
3       took the 3D data and imported it into related computer software, generating  
4       a 3D image of the international crime scene. He verified the accuracy of the  
5       rendering through a Camera 4 video overlay, photos of the crime scene,  
6       Googlemaps street views, a crime scene visit and mathematical calculations,  
7       and determined that the 3D international crime scene is accurate.

8           3.       3D Crime Scene videos. Using the 3D international crime scene  
9       described above, in para. 2, Mr. Tavernetti created the "fly around" exhibits.  
10      First, he placed the vehicles, rocks, and shell casings in the 3D crime scene  
11      using BPA Carranza's Total Station measurements of the vehicle tires, rocks  
12      and shell casings. BPA Carranza "shot" the measurements using two-  
13      dimensional settings, so the items were properly spaced on a horizontal  
14      plane. All items "shot" with the scanner were on the ground, so Mr.  
15      Tavernetti placed the items on the ground, spaced from the reference point  
16      as indicated by the 2D total station scan. Because the exact sizes of the  
17      bullet casing and rocks were not available, Mr. Tavernetti simply represented  
18      them with dots. Mr. Tavernetti had the factory dimensions of the vehicles  
19      on scene and was able to precisely size them according to those dimensions.  
20      Mr. Tavernetti verified the accuracy by reviewing crime scene photos and a  
21      camera match with the video from Camera 4, and determined the result was  
22      accurate.

23           4.       Defendant and Victim – Mr. Tavernetti used the height and weight of  
24      the defendant (from the defendant's statement under oath) and the victim  
25      (from the autopsy report). He produced avatars showing the anatomical  
26      figures generated by recognized computer software that match these  
27      defendant and the victim.

28           a.       Mr. Tavernetti used the measurements from the autopsy report  
to place the bullet wounds on the victim's avatar, and confirmed the wound  
placement by consulting with the government forensic pathologist. This  
avatar was placed in an exhibit that rotates and shows the placement of the  
wounds and the bullet trajectories for those bullet paths verified by the  
government's forensic pathologist. Clearer autopsy photos were received  
this year, and an updated wound placement avatar is expected before trial,  
which will again be verified by the forensic pathologist prior to being  
finalized.

          b.       The victim's avatar, with bullet wounds properly placed as  
verified by the forensic pathologist was then positioned in the crime scene in  
the standing/turning/running "rocker" position, and also lying face down on  
the pavement as seen in the crime scene photos. Using the video and bullet  
casing placement, three (3) shooting positions used by the defendant were  
identified, and a computer marker was placed at gun height in the 3D crime  
scene at each shooting position. Additionally, the bullet impacts on the wall  
identified by Lucien Haag, were placed on the crime scene. Using widely  
recognized computer software, Mr. Tavernetti produced trajectories from the  
"gun" marker to the wounds on the victim's body and to the bullet impacts  
on the wall, creating several possible scenarios of how and when the victim's  
wounds occurred.

          c.       The defendant's avatar was not used in any of the 3D exhibits  
as a human-looking figure. However, the defendant's height and weight was

1 used to produce a similarly sized cylinder object to represent the defendant  
2 in the shooting sequence exhibits.

3 5. Camera Match. The “camera match” files involved Mr. Tavernetti  
4 overlaying the 3D crime scene with the actual video of the event (Camera 4).  
The immobile physical characteristics of the crime scene (i.e. light poles,  
structures, etc.), as well as the vehicles matched perfectly. This verified the  
accuracy of the 3D animation.

5 6. Shooting Sequence. Using the camera match (3D crime scene  
6 overlaid with Camera 4) Mr. Tavernetti placed cylindrical objects in the 3D  
7 scene to represent the three rockers and the defendant. Mr. Tavernetti used  
8 cylinders instead of humanoid avatars, because he did not want to opine on  
9 which direction the figures were facing, heads were rotating or any other  
10 parts of their bodies were moving. Instead, the match of the cylinders,  
11 overlaid on the figures in the video, simply show the movements and pauses  
of the figures through the crime scene and the timing of that movement.  
Additional “blinking” was added to the cylinder representing the defendant  
in order to demonstrate the timing of the shots based solely on the number of  
shell casings at each location, the amount of time the defendant spent at each  
shooting position, and then evenly spacing the blinks during those pauses.

12 7. Shake Removed. Mr. Tavernetti used a camera match of the 3D crime  
13 scene overlaid with the Camera 4 video, focusing continually on the same  
segment of crime scene, and ignoring the rest, so that the rockers and the  
defendant can be more clearly observed.

14 8. Hand-held recordings. Mr. Tavernetti visited the crime scene and  
15 based on his knowledge of the timing of the defendant’s movements, created  
16 a video in which he uses the same timing and goes to the same shooting  
positions as the defendant, within the same time frame as the defendant.

17 Mr. Tavernetti is not expected to offer any opinions extraneous to his computer  
18 renderings, such as an opinion on whether the victim’s body moved while the victim was  
19 lying on the ground.<sup>1</sup> As shown in the preceding paragraph, Mr. Tavernetti’s testimony  
20 will be limited to how he created the exhibits the government intends to use at trial, and to  
21 provide a foundation for admissibility of those exhibits. All of his exhibits are grounded  
22 in fact and measurements.

23 Mr. Tavernetti’s videos will be useful to the triers of fact in understanding the  
24 location of the evidence, the overall crime scene terrain, the location and distance between  
25 the defendant and the victim, bullet trajectories, the location wounds on the victim’s bodies,

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28 <sup>1</sup> Although a comment about movement is included in one of Mr. Tavernetti’s reports, the  
government will not seek to elicit that statement at trial.



1 the sequence of events, and illustrate the government's theory of the approximate timing  
2 of the sixteen shots fired by the defendant, vis-à-vis the victim's location.

3 Recent district court decisions addressing *Daubert* challenges to the admissibility  
4 of forensic animation can be found in *Kirksey v. Schindler Elevator Corp.*,  
5 2016WL5239874, \*5 (S.D. Alabama 2016), *United States v. Warren*, 2015WL 4129379,  
6 \*4 (W.D. Pennsylvania 2015), and *Belisle v. BNSF Railway Co.*, 2010WL1424344, \*5 (D.  
7 Kansas 2010). See also *Hinkle v. City of Clarksburg*, 81 F.3d 416, 424 (4<sup>th</sup> Cir. 1996). In  
8 *Warren*, the court admitted an animation based on a laser scan of a residence to demonstrate  
9 what an officer coming through the door of the residence could have seen. *Warren* at pp.  
10 4, 7. The court found the models passed a *Daubert* challenge because they would assist  
11 the fact-finder and were "based on sufficient data and facts, in that they stem from facially  
12 reliable architectural and technological principles and methods consistent with the  
13 standards set out in *Daubert*." *Id.* at 7. Similarly, Mr. Tavernetti's models are based on a  
14 3D laser scan of the crime scene and the factual data from the crime-scene and video of the  
15 event, all processed through widely recognized computer software. In *Belisle*, the district  
16 court found that animations based on a sufficiently reliable expert (an accident  
17 reconstruction expert) are admissible. *Belisle* at 4-5. Similarly, Mr. Tavernetti's  
18 animations are based on reliable 3D and 2D data and the opinion of a recognized forensic  
19 pathologist. Additionally, Mr. Tavernetti's Fly Around and Shoot Sequence animations  
20 are further verified by an actual video of the event (see Camera Match files).

21 In *Hinkle*, the Court found the testimony of an "animation technologist" who  
22 produced a "version of the shooting that was based on his interpretation of the evidence  
23 and was consistent with the police officer's [civil defendant] testimony" was permissible.  
24 *Hinkle*, 81 F.3d at 424-25. The Court described the animation as showing an animated  
25 version of the officer and the plaintiff's body leading up to and during the shooting. *Id.* at  
26 424. In the instant case, the government's animations are nowhere near as "lifelike," nor  
27 do they seek to be. Nor does the Mr. Tavernetti "interpret" a version of the events. Mr.  
28 Tavernetti's animations are restricted to the facts, and show those facts in the most clinical



1 way possible. There are no “recreations” or “interpretations” of the shooting. Some of the  
2 exhibits are the actual video of the event and 3D crime scene with the cylinders moving  
3 within it as shown in the crime scene video. None of the exhibits are run through  
4 computerized filters or have “enhancements” added to them. The avatar of the victim’s  
5 wounds and possible bullet trajectories are similarly clinical and based on facts. These  
6 renderings are simply a 21<sup>st</sup> Century version of the use of a mannequin to represent the  
7 decedent, a magic marker to indicate wounds, and a long stick to replicate possible bullet  
8 trajectories that have been used in criminal trials for over a century and more likely longer.  
9 Mr. Tavernetti’s animations are (1) “based upon sufficient facts [and] data,” (2) are the  
10 “product of reliable principles and methods,” and (3) Mr. Tavernetti has reliably applied  
11 these principles and methods to the facts of the case. Fed. R. Evid. 702; see also *Daubert*,  
12 509 U.S. at 579 (expert testimony admissible if it “rests on a reliable foundation” and is  
13 relevant to the case). Therefore, his testimony and exhibits meet the standard in *Daubert*  
14 and should be admitted, subject to the admissible testimony of the underlying evidence at  
15 trial. (*i.e.* Haag 3D scan, Carranza 2D scan, crime scene photos, crime scene video, autopsy  
16 photographs, autopsy report measurements, forensic pathologist’s opinions.)

17 Wherefore, the United States of America respectfully requests that the court permit  
18 Mr. Tavernetti’s testimony and animations at trial, subject to the proper admission of the  
19 underlying evidence on which he relied.

20 Respectfully submitted this 11th day of June, 2017.

21  
22 ELIZABETH A. STRANGE  
Acting United States Attorney  
District of Arizona

23  
24 *s/ Mary Sue Feldmeier*

25 MARY SUE FELDMEIER  
Assistant U.S. Attorney

26 Copy of the foregoing served electronically or by  
27 other means this 11th day of June, 2017, to:

28 Sean C. Chapman, Esq.  
Jim Calle, Esq.